

THE CLAIMS

What is claimed is:

1. A semiconductor bridge igniter comprising:
a substrate;
an electrical bridge structure disposed on the substrate and electrically insulated therefrom, the bridge structure comprising a layer of a material having a negative coefficient of electrical conductivity at temperatures above ambient temperature and having disposed thereover a layer of titanium, the bridge structure comprising a bridge section extending between and connecting spaced-apart pad sections, each pad section being of larger area than the bridge section; and
a pair of electrically conductive lands each overlying a respective one of the pad sections and being spaced apart from each other to leave the bridge section exposed.
2. The semiconductor bridge igniter of claim 1 further comprising a pair of electrical leads, one connected to a respective one of the electrically conductive lands.
3. The semiconductor bridge igniter of claim 2 further including a source of electrical energy connected to each of the electrical leads to define an electrical circuit extending from one lead, to one of the electrically conductive lands, through the bridge section, thence to the other electrically conductive land and the other electrical lead.
4. The semiconductor bridge igniter of claim 3, wherein the source of electrical energy comprises a capacitor.
5. The semiconductor bridge igniter of claim 1, claim 2 or claim 3 wherein the substrate comprises silicon having a silicon dioxide layer, and wherein the electrical bridge structure is disposed upon the silicon dioxide layer.
6. The semiconductor bridge igniter of claim 1, claim 2 or claim 3 wherein the substrate comprises sapphire.

7. The semiconductor bridge igniter of claim 1, claim 2 or claim 3 wherein the material having a negative coefficient of electrical conductivity comprises polysilicon.
8. The semiconductor bridge igniter of claim 7 wherein the polysilicon is undoped.
9. The semiconductor bridge igniter of claim 1, claim 2 or claim 3 wherein the material having a negative coefficient of electrical conductivity comprises crystalline silicon.
10. The semiconductor bridge igniter of claim 9 wherein the crystalline silicon is undoped.
11. The semiconductor bridge igniter of claim 1, claim 2 or claim 3 disposed in contact with an energetic material charge contained within the header of an igniter assembly.
12. The semiconductor bridge igniter of claim 1, claim 2 or claim 3 made by a method which includes preconditioning the titanium semiconductor bridge igniter by heating it to an elevated temperature to stabilize it against temperature-induced variations in bridge electrical resistance.
13. The semiconductor bridge igniter of claim 12 including heating the igniter to an elevated temperature of from about 37°C to about 250°C.
14. The semiconductor bridge igniter of claim 12 including heating the igniter to an elevated temperature of from about 100°C to 250°C.
15. The semiconductor bridge igniter of claim 1, wherein said pair of electrically conductive lands comprises a metal.
16. The semiconductor bridge igniter of claim 15, wherein said metal is selected from the group comprising aluminum, gold, silver, chromium, and combinations thereof.